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AVAILABLE: Library of Congress

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VK/vm

27 June 1958

KOSYAK, Yu.F., inzh.; SAVUKOV, V.P., inzh.

Erosion control of the last stages of large steam turbines.
Energomashinostroenie 6 no.7:35-38 J1 '60 J1 '60.
(MIRA 13:7)

(Steam turbines)

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S/114/61/000/004/005/006
E194/E435

18 8310

26.2122

AUTHORS: Timerbulatov, M.G., Candidate of Technical Sciences
and Savukov, V.P., Engineer

TITLE: Increasing the Erosion Resistance of Steam Turbine
Blade Steels by Electric Spark Reinforcement

PERIODICAL: Energomashinostroyeniye, 1961, No.4, pp.32-34 and 40

TEXT: There is evidence that erosion of the inlet edges of blades of the last stages of the low pressure cylinders of steam turbines operating in wet steam is of a cavitation nature. It is considered that erosion is much affected by high frequency break-away of water from the blade surface due to the high speed of rotation. Previous work has demonstrated the possibility of improving the cavitation resistance of steels by electric spark treatment. Accordingly, tests were made with the improved equipment of TsNIITMASH, UAC-2M (IAS-2M), which can be used to reinforce the surface of steel up to a depth of 0.1 to 1.5 mm at the rate of 10 cm²/min. The tests were made on steel 1X13 (1Kh13) which is used for steam turbine blades after hardening at 1050°C in oil and tempering at 680 to 740°C (hardness 187 - 217 HB). Five

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Increasing the Erosion ...

different electrode materials were used of the following analysis: ferro-chrome (70.3% Cr, 0.13% C, remainder Fe); T15K6 (79% WC, 15% TiC, 6% Co); BK 2 (VK2) (98% WC, 2% Co); Stellite No.1 (25.5% Cr, 61.7% Co, 7.14% W, 0.15% C, 0.75% Si, 0.85% Fe); nickelboron (11.54% B, 12.5% Al, 0.87% Si, 1.33% Fe, remainder Ni). During the process of electric spark treatment the short spark impulses cause melting of small areas of the electrode and of the treated product accompanied by some vapourization. Electrode material is transferred to the product surface and mixes with the metal forming an alloyed surface layer. The process is accompanied by the absorption of nitrogen and the formation of nitrides. Photo-micrographs of reinforced steels show an upper layer of reinforcement followed by a sub-layer and then the main metal. Fig.2 shows graphs of the micro-hardness in kg/mm² of these various layers plotted against depth in mm for the different electrodes which were: (1) nickelboron, (2) T15K6, (3) VK2, (4) FeCr, (5) Stellite No.1. Test results show that the electric spark treatment appreciably increases the ultimate strength and yield point but the relative elongation and section constriction

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S/114/61/000/004/005/006
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Increasing the Erosion ...

are somewhat reduced. The results also showed that electric spark treatment reduces the impact strength of steel 1Kh13 by 8 to 22%. After prolonged shot treatment some of this loss of impact strength is recovered. The resistance to cavitation erosion was studied on a magnetostriction apparatus using tap water at a temperature of 25°C, and a vibrator frequency of 8100 c/s at an amplitude of 70 microns. The results are plotted as histograms in Fig.3 where the y axis gives loss of weight, the figures 600, 1100 and 1700 correspond to the watts of power in reinforcement and the columns are respectively, Without Reinforcement, FeCr, Stellite, NiB, VK2 and T15K6 - FeCr and T15K6 - FeCr and T15K6. It will be seen that with electrodes T15K6 and 600 W power conditions the cavitation resistance increases by a factor of 8.6 and for ferrochrome by a factor of 4.4. The other electrodes tested gave results of the same order. The loss of weight with the more severe conditions of reinforcement is appreciably greater than when the wattage is low, partly as a result of scaling and partly because of reduction of hardness. Short term tests show that the scale is removed quickly and thereafter the rate of loss

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Increasing the Erosion ...

of weight is slower. The influence of electric spark treatment on the corrosion resistance of steel 1Kh13 was determined in tests in water containing 750 mg/litre of Na₂SO₄ and NaCl at 100°C. The spark treatment had practically no influence on the corrosion resistance. The advisability of using electric spark treatment for protecting individual parts depends not only on the strength of the surface layer but on the influence of the cavitation erosion action under the given service conditions. For parts subject to very intense action this method of protection may be short lived because once the protective layer is removed the base metal wears as usual. On the other hand, if the cavitation conditions are moderate, electric spark treatment is very effective and this is particularly true of blades in the last stages of steam turbines. Under service conditions in the blades of a turbine type BKT-100 (VKT-100) this method gave good results and the use of electrodes T15K6 gave the best results. Compared with other methods of improving the resistance to erosion, electric spark reinforcement is simple and cheap as it does not employ deficit materials and does not distort the blades. The treatment can be repeated without dismantling the blades. It

Card 4/6

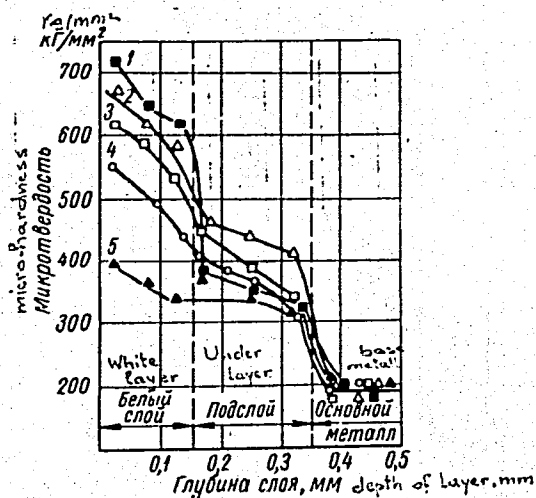
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S/114/61/000/004/005/006
E194/E435

Increasing the Erosion ...

is expected that as techniques improve, still better results will be obtained. There are 4 figures, 5 tables and 8 Soviet references.

Fig.2.



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L 32267-65 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(b)/
EWP(1) Pf-4 MJW/JD/HW

ACCESSION NR: AR4048242

S/0137/64/000/009/1052/1052

SOURCE: Ref. zh. Metallurgiya, Abs. 91324

AUTHOR: Pilyushenko, V. L.; Kondrashov, A. I.; Tutov, I. Ye.;
Savukov, V. P.; Gurozhiyenko, K. F.; Kamalov, V. Z.

TITLE: High strength steel for hydro presses

CITED SOURCE: Sb. Legirovaniye staley. Kiyev, Gostekhnizdat USSR,
1963, 20-32

TOPIC TAGS: high strength metal, steel, hydro press, heat treatment,
metal mechanical property/ steel KhMFN, steel 25Kh2MFN, steel 5KhNM

TRANSLATION: An investigation was made of steel KhMFN, alloyed
with additions of aluminum (0.6%), boron (0.0015-0.0085%), tungsten
(0.7-1.25%), sulfur (0.015-0.040%), silicon (0.3-2.1%), manganese
(0.4-1.4%). Forged billets were heat treated under two conditions:
1) normalization from temperature Ac3+500, cooling at the rate of
1000/hr to 3000, and 2) quenching in oil from Ac3+500. Tempering was
performed for 5 hrs at 500, 550, 600, and 6500. The steel was

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L 32267-65

ACCESSION NR: AR4048242

evaluated by mechanical tests at 20, 350, and 450°. Steel 25Kh2MFN has the highest strength and ductility. A model of a hydropress container ring (diameter 1220/1850 mm, height 880 mm) prepared from this steel has, in an annealed state, σ_s 54.2-57.4 kg/mm², σ_b 70.5-75.5 kg/mm², δ 19.4-21.6%, ψ 56.5-59.8%, α_k 9.7-14.4 kgm/cm², H_B 217-228. The critical points of the steel are $A_{c1}=780^\circ$, $A_{c3}=830^\circ$, $A_{r3}=470^\circ$, $A_{r1}=340^\circ$. Optimum temperature of austenization is 900°. Mechanical properties do not change in the cross sections of either annealed or normalized states from 900° (σ_s 115 kg/mm², σ_b 133-147 kg/mm²). Additional tempering at 450° for 5 hrs increases ductility. Optimal tempering temperature (after normalization and quenching with tempering at 450°), ensuring the best combination of ductility and strength, is at 540-560°. Steel 25Kh2MFN has high hardenability. The properties of steel 25Kh2MFN are compared with those of steel 5KhNM. The resistance of steel 25Kh2MFN to tempering is determined: a) by carbide dispersion, and b) by alloying with ferrite of chromium, molybdenum and vanadium, regardless of tempering temperature. Agint the steel at 400-450° (500 and 1000 hrs) does not lower mechanical properties. Tests were performed on steel 25Kh2MFN for wear resistance, erosion resistance

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L 32267-65

ACCESSION NR: AR4048242

and stress-rupture strength under cyclic stress (450° , sigma 50-100 kg/mm²). 8 tables. B. Samarin.

SUB CODE: MM

ENCL: 00

Extrusion, container ring

18

Card 3/3

SAVUKYNAS, B.; VANAGAS, A.A; VITKAUSKAS, V.; VOSYLYTE, K.;
ERMANYTE, I.; GRINAVECKIENE, E., otv. red.; SENKUS, J.,
red.; LUKOSEVICIUS, St., tekhn. red.

[Names of rivers and lakes of the Lithuanian S.S.R.]
Lietuvos TSR uiu ir ezeru vardynas. Vilnius, Valstybine
politines ir mokslines literaturos leidykla, 1963. 225 p.
(MIRA 16:11)

1. Lietuvos TSR Mokslu Akademija. Vilna. Lietuviu kalbos
ir literaturos institutas.
(Names, Geographical--Dictionaries)

SAVUL, ABABI

RUMANIA/Cosmochemistry, Geochemistry, Hydrochemistry.

D.

Abs Jour : Ref Zhur - Khimiya, No 12, 1958, 39233

Author : Savul, Abahi

Inst : Academy RIR.

Title : Copper, Zinc and Lead as Trace Elements in Limestones and Dolomites of East Carpathians.

Orig Pub : Studii si cercetari stiint. Acad. RIR Fil. Iasi, Chim., 1956, 7, No 1, 181-200

Abstract : By means of chemical analysis on 31 samples, the content, migration ability and the distribution of copper, zinc and lead were determined. The usual ~~maximum~~ concentrations (in %) were found to be: $Cu = 8.8 \cdot 10^{-3}$ (in two samples it was $1.75 \cdot 10^{-2}$), $Zn = 5.2 \cdot 10^{-3}$, $Pb = 5.6 \cdot 10^{-3}$ (in one sample it was $1.9 \cdot 10^{-2}$). The limestones and dolomites do not differ in the amount of

Card 1/2

RUMANIA/Cosmochemistry, Geochemistry, Hydrochemistry.

D.

Abs Jour : Ref Zhur - Khimiya, No 12, 1958, 39233

trace elements. The frequency curves of those elements are not symmetrical, and have their maxima below the mathematical average. The ratio of zinc to lead is almost constant and has an average of 1.63. The relatively great motility of copper leads to its high concentration in certain cases. A conclusion was drawn as to the biogenetic origin of the above-mentioned elements.

Card 2/2

SAVUL, M.; OLARU, Didina

Strontium as a minor element in Triassic carbonate rocks in Dobruja.
Studii chim Iasi 14 no.1:93-102 '63.

1. Filiala Iasi a Academiei R.P.R., Sectia de geochimie.

SAVUL, M., prof.; MOVILEANU, Aurelia

Copper, zinc, and lead as trace elements in the Triassic carbonate rocks of northern Dobruja. Studii chim Iasi 11 no.1:27-41 '60. (EEAI 10:3)

1. Membru corespondent al Academiei Republicii Populare Romine, Ccmitetul de redactie, Studii si cercetari stiintifice, Chimie, Filiala Iasi (for Savul)

(Dobruja--Rocks)
(Copper)

(Trace elements)
(Lead)

(Carbonates)

SAVUL, M.; POMIRLEANU, V.

Paleogeothermometric studies on complex sulfur deposits localized
in the crystalline schists of the Rumanian Eastern Carpathians. Pt.
3. Anal St Jassy II 9:1-6 '63.

SAVUL, Mircea A.

DECEASED

1164

GEOCHEMISTRY

Deceased 13 May 64

SAVULA, M.M.

Influence of antibacterial therapy on the sugar curve in pulmonary tuberculosis. Vrach. delo no.5:142-143 My '61. (MIRA 14:9)

1. Kafedra tuberkuleza (zav. - prof. I.T.Stukalo) L'vovskogo meditsinskogo instituta.
(TUBERCULOSIS) (BLOOD SUGAR)

R. J. A. M.

SĂVULESCU (ALICK). *Eine neue Krankheit bei Carthamus tinctorius L. (Saflor) hervorgerufen durch Macrosporium carthami Săvul.* [A new disease of *Carthamus tinctorius* L. (Safflower), caused by the fungus *Macrosporium carthami* Săvul.]—*Bull. Sect. sci. Acad. roum.*, xxvi, 10, pp. 1-20, 8 pl., 11 figs., 2 graphs, 1944.

This work has been already noticed from another source [*R. J. A. M.*, xxv, p. 472].

SAVULESCU, A.

R of A M

SAVULESCU (ALICE). O nouă boală pe *Carthamus tinctorius* L. (pătrânză), produsă de ciupercă *Macrosporium carthami* Săvul. [A new disease of *Carthamus tinctorius* L. (Safflower), caused by the fungus *Macrosporium carthami* Săvul.] —*Anal. Inst. Cerc. agron. Român.*, xv, pp. 213-214, 1945.

This new disease of safflower caused by the fungus *Macrosporium carthami* [R.A.M., xix, p. 116] was first noticed in 1940. Spots appeared on both sides of the leaf surface and, in cases of serious infection, on the branches and stem; flowering is considerably or entirely arrested, and great damage is done. The fungus forms a dark mycelium on the plant and conidiophores on the leaf surface. Conidia and a resistant mycelium were found on the seed coat.

The optimum temperature for the germination of the spores is 23° C. and germination took place up to 29°. The spores tolerate a temperature of 0° and death occurs after holding them for 20 hours at 40°. A rather low humidity is sufficient for germination, and they resist dry atmospheres well. The fungus was grown in culture on Czapek, malt agar, and maize meal agar. There was, however, no spore formation, but a resistant mycelium appeared in about three days, the most favourable pH being 6-6.

over

A temperature of about 25° is required for the development of infection in the field, and humidity for its expansion. When temperatures rise or dry weather continues, the disease does not make much progress. Infection is produced by spores from the soil, fallen leaf-refuse, by wind-borne spores and by resistant mycelium on the seed.

Of seven varieties of safflower cultivated in Rumania, the local, Giessen, and Krasnodar varieties are resistant, and the Bessarabian, Yenica (? Yenidje), Anatolian, and Pavlikeni susceptible. Experiments undertaken with this fungus indicate that it is restricted to a single host. Safflower is attacked either before or during flowering and only in favourable conditions of temperature and humidity.

The cultivation of resistant, high-yielding varieties such as the local and, secondly, Giessen, burning of infected plants and plant refuse, and abstention for some years from growing the crop on land where the disease has occurred, are measures recommended for control. Seed-disinfection with mercurials did not give control.

R J A M. CIVULESCU, H.

SĂVULESCU (ALICE) & HULEA (ANA). Un aspect différent de l'attaque produite par *Actinomyces scabies* (Thaxt.) Güssow, agent pathogène de la gale ordinaire de la Pomme de terre. [A different aspect of the attack produced by *Actinomyces scabies* (Thaxt.) Güssow, pathogenic agent of common Potato scab.] - *Bull. Sect. sci. Acad. roum.*, xxix, 9, pp. 607-611, 6 figs., 1947.

Potato scab (*Actinomyces scabies*) is very widespread in Rumania, where the symptoms are generally of the usual kind. In 1945, different symptoms appeared on purple-skinned Blaue Riesen tubers in a field in the commune of Cheia (Department of Prahova). These showed conspicuously raised, confluent, cracked lesions, with corky walls. The affected portions of the tubers presented a markedly blistered appearance, the symptoms thus resembling those due to *A. aeruginosus* [R.A.M., i, p. 183]. The white-skinned Parnassia variety, which was growing in the same field, showed the flat lesions of ordinary scab. In culture on glycerinated Czapek medium the organisms isolated from each kind of lesion gave rise, after 20 days, to the same greyish-white aerial mycelium. Both, in the presence of tyrosine, produced a brown pigment, and both liquefied gelatine. The microscopic characters of both were also identical with those of *A. scabies*. Inoculations by planting tubers in infected soil, in artificially inoculated soil, or through wounds resulted in the development of lesions on two varieties only (not including Blaue Riesen, which was unobtainable) and these were characteristic of ordinary scab, while the lesions themselves contained the mycelium of *A. scabies*.

It is concluded that the two forms of the disease observed on Blaue Riesen and Parnassia, respectively, were both due to *A. scabies*. The blistered appearance of the Blaue Riesen tubers appears to be a symptom of *A. scabies* not hitherto reported. Further work is in progress.

SAVULESCU, A.

Contributions to determination of the efficacy of
different substances and products for preventions of
apple blotch and apple scab (Endostigma inaequalis
(Cooke) Syd.), diseases of apple trees. p. 973.
Academia Republicii Populare Romine. COMUNICARILE. Bucuresti.
Vol. 5, no. 6, June 1955.

SOURCE: East European Accessions List (EEAL) Library of Congress,
Vol. 5, No. 12, December 1956

SAVULESCU, A. ; STAN, S.

SAVULESCU, A. ; STAN, S. Influence of some growth stimulating substances of the production and quality of tomatoes. p. 1007.

Vol. 6, no. 8, Aug. 1956

COMUNICARILE.

SCIENCE

RUMANIA

So: East European Accession, Vol. 6, No. 5, May 1957

SAVULESCU, A.

ROMANIA/Plant Diseases - General Problems.

Ref Jour : Ref Jour - Rom., No 3, 1956, 11493

Author : Savulescu, A., Pop, I.

Info :

Title :

On the Question of the Study of Big Bud /stoilbur/ in Rumania.

Orig Pub : Bul. stiint., Acad. REP. Sec. biol. si stiinta agric. 1956, 3, No 4, 723-737

Abstract : Big bud /stoilbur/ of the potato family is very widespread in Rumania. A description is given of the disease's symptoms in Solanum tuberosum L., S. lycopersicum L., S. melongena L., Capsicum annum L., Convolvulus arvensis L. Experiments were conducted in transmitting the disease through grafting and with insects (Aphis obsolatus) from infected S. tuberosum, S. lycopersicum, S. melongena, C. annum plants to healthy tomato plants. It has been determined that big bud is one of the causes of springiness in

Card 1/2

ROMANIA/Plant Diseases - Diseases of Cultivated Plants.

0-3

Abs Jour : Ref Zhur - Biol., No 7, 1958, 30243

Precipitation shows a positive effect on this process. In the orchard the process of ripening lasts from 45 to 50 days. Precipitation and wind play a substantial role in the dissemination of the ascospores. To determine the time for spraying, it is essential to consider the weather conditions, investigate the state of the perithecia in the orchard and, aside from this, to plant additional spores in the laboratory as a control. The bibliography lists 36 titles. -- K.V. Popkova.

Card 3/3

- 17 -

SAVULESCU, A., AND OTHERS

Effectiveness of certain organic products in fighting the grapevine mildew Plasmopara viticola (Berk. and Curt.) Berl. and Toni, and the apple blotch Endostigme inaequalis (Cooke) Syd. In French. p. 35.

REVUE DE BIOLOGIE. JOURNAL OF BIOLOGY. (Academia Republicii Populare Romine)
Bucuresti, Rumania. Vol. 3, no. 1, 1958.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 7, July 1959.

Uncl.

SAVULESCU, A.; BONTEA, V.; FOCSANEANU, I.

Effectiveness of some organic preparations in fighting the vine mildew
(*Plasmopara viticola* (Berk. et Curt.) Berl. et de Toni) and the apple speckles
(*Endostigme inequalis* (Cooke) Syd.) p. 313.

COMUNICARILE. Bucuresti, Rumania. Vol. 8, no. 3, Mar. 1958.

Monthly List of East European Accession (EEAI), LC, Vol. 8, No. 9, September, 1959.

Uncl.

COUNTRY : Romania
 SUBJECT : Cultivated Plants. Potatoes. Vegetables.
 Cucurbits.
 SOURCE : Ref Zhur-Biologiya, No.1 , 1959, No. 164
 Author : Savulescu, Alina; Bretan, I.
 INST. : Romanian Agric. Inst.
 TITLE : The Problem of Potato Degeneration: Data of
 the Transylvanian Experimental Stations of the
 Rouranian Agricultural Institute on the rela-
 ORIG. PUB.: Probl. agric. 1958, 10, No.2, 38-45
 ABSTRACT : At the experimental station of Magurela, in the
 years of 1951 through 1956, experiments were
 set up in order to clarify the effectiveness
 of summer plantings in the struggle with degen-
 eration. However, the varieties of Spunar,
 Viola and Friska continued to degenerate. In
 the year of 1955, for instance, under spring
 sowing, plants with degeneration symptoms ac-
 cording to varieties amounted to 17.8, 7.8 and
 26.5%, respectively, and under summer sowing :
 Relationship of some Varieties towards Degeneration.
 CARD : 1/2

SAVULESCU, A., AND OTHERS

Studies on the necrosis of the grapevines of Rumania. p. 239.

STUDII SI CERCETARI DE BIOLOGIE. SERIA BIOLOGIE VEGETALA. Bucuresti.
Vol. 10, no. 3, 1958.

Monthly List of East European Accessions (EEAI) IC, Vol. 9, no. 1, January 1960.

Uncl.

SAVULESCU, A.; RAICU, C.

Contributions to the knowledge of the pathogenic agent provoking the rotting of seeds and the withering of plants of cotton. p. 345.

STUDII SI CERCETARI DE BIOLOGIE. SERIA BIOLOGIE VEGETABLA. Bucuresti. *Rumania*
Vol. 10, no. 4, 1958.

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 1, January 1960.

Uncl.

SAVULESCU, A.

COUNTRY : Rumania
CATEGORY :

H-18

ABB. JOUR. : AZKhim., No. 20 1958, No. 72453

AUTHOR : ~~Savulescu, A.~~; Bontea, V.; Vochanescu, I. J.

INST. : Romanian Academy

TITLE : Effectiveness of Domestic Organomercury Preparation in Control of Apple Scab [*Endostigme inaequalis* (Cooke) Syd.]

ORIG. PUB. : Studii si cercetari biol. Acad. RPR Ser. Biol. veget., 1958, 10, No 4, 393-408

ABSTRACT : In testing a number of organic preparations for control of apple scab, to find a substitute for Bordeaux mixture (BM), the most effective was found to be Kerphazin, containing phenylmercuriochloride. The quality of fruit, their taste, contents of sugar and vitamine C, are higher than those of apples treated with BM. The preparation can be recommended for control of apple scab, at concentration of 0.2% prior to blossoming, and of 0.1% after blossom. To preclude instances of poisoning, other preparations containing Hg should be used in the last application.

I. Mil'shteyn.

CARD:

* Bontea, V.; Giurea, M.

SAVULESCU, A.

Studies on vine necrosis in the Rumanian People's Republic. In English. p. 27

REVUE DE BIOLOGIE. JOURNAL OF BIOLOGY (Academia Republicii Populare Romine)
Bucuresti, Rumania
Vol. 4, no. 1, 1959

Monthly list of Eastern European Accession Index (EEAI), LC Vol. 8, No. 11
November 1959
Uncl.

SAVULESCU, Alice: RAICU, Cristina

Contributions to the study of the pathogenic agent of seed-rot and damping-off of cotton seedlings. Rev biol 4 no.2:231-245 '59.

(EEAI 9:8)

1. Corresponding member of the Academy of the R.P.R. (for Savulescu)
(COTTON) (DAMPING-OFF DISEASES)

SAVULESCU, A.; LAZAR, V.; BECERESCU, D.

Effect of some oidia on plastics. Rev biol 5 no.1/2:67-75 '60.
(EEAI 10:9)

1. Membre correspondant de l'Academie de la Republique Populaire Roumaine; Comite de redaction, "Revue de Biologie", Redacteur en chef (for Savulescu).

(Fungi) (Plastics)

SAVULESCU, Alice; LAZAR, Viorica; BECERESCU, D.

Influence of some mold fungi on plastic materials. Studii cerc biol
veget 12 no.2:155-164 '60. (EEAI 9:11)

1. Membru corespondent al Aca demiei Republicii Populare Romine
(for Savulescu)
(Molds (Botany)) (Fungi) (Plastics)

SAVULESCU, Alice, dr.

The 10th International Conference for Plant Protection
and Quarantine, Bucharest, September 16-29, 1960. Natura
Geografie 12 no. 6:40-47 N-D '60.

1. Membru corespondent al Academiei R.P.R.

SEVULESKU, A. [Savulescu. A.]; g. Bukharest, Rumyniya; RAYANU, M.,
g. Bukharest, Rumyniya; RAYKU, K., g. Bukharest, Rumyniya;
MOSHINYAGE, V., g. Bukharest, Rumyniya

Determining the rot resistance of seeds and seedlings in corn
varieties, lines, and hybrids by the "cold" germination method.
Agrobiologia no.5:763-765 S-O '61. (MIRA 14:10)
(Corn (Maize))--Varieties
(Germination)

SAVULESCU, Alice; PLOAIE, P.

Some new viroses in the flora of Rumania. Comunicarile AR 11 no.5:
579-586 My '61.

1. Membru corespondent al Academiei R.P.R. (for Savulescu)

SAVULESCU, Alice; PLOASIE, P.

Is the clover phyllode of Rumania a virosis of the stolbur group?
Comunicarile AR 11 no.11:1357-1363 N '61.

1. Membru corespondent al Academiei R.P.R.(for Savulescu)

SAVULESCU, Alice; BECERESCU, D.; PUSCASU, A.; BOJOR, O.; PLATON, Florentina;
~~GOICIU, Evdochia~~; STEFANESCU, A.; MOGA, Rodica; DRAGOMIRESCU-MANUCHIAN,
Maria

Research on the producing of spurred rye in Rumania. Studii cerc
biol veget 13 no.2:149-173 '61. (EEAI 10:11/12)

1. Membru corespondent al Academiei R.P.R.(for Savulescu) 2. Institutul
de cercetari agronomice(for Goiciu, Becerescu, Stefanescu, Puscasu,
Moga) 3. Institutul pentru controlul de stat al medicamentului si de
cercetari farmaceutice(for Bojor, Dragomirescu-Manuchian, Platon).

(Argot)

SAVULESCU, Alexandru; FURNICA, Horatiu; ENESCU, Valeriu

Contributions to the knowledge of oak groves in the Birsă Plain.
Studii cerc biol veget 13 no.2:273-291 '61.

(EEAI 10:11/12)

1. Comunicare prezentata de C.C. Georgescu, membru corespondent al
Academiei R.P.R.

(Oak)

STEOPOE, I.; SAVULESCU, A.; PLOATE, P.

Changes of the cell kernel in the polyhedrosis of the larvae of Leucoma (Stilpnotia) salicis L. Rev biol 6 no.4:411-424 '61.

1. Naturwissenschaftliche Fakultät der Universität "C. I. Parhon" und Institut für Biologie "Traian Savulescu" der Akademie der Rumänischen Volksrepublik. 2. Korrespondierendes Mitglied der Akademie der Rumänischen Volksrepublik, Rédacteur en chef, "Revue de biologie" (for Savulescu).

SEVULESKU, Tr. [Savulescu, Tr.], acad.; SEVULESKU, Alis [Savulescu, Alice]; BONTIYA, Vera [Bontea, Vera]

Foundations and methodology of the development of prognoses of the appearance of diseases on cultivated plants in Rumania. Rev biol 7 no. 4: 491-505 '62.

1. Chlen-korr. Akad. RNR. (for Savulescu, Tr., Savulescu, Alice).

SAVULESCU, Alice, acad.; DUMITRAS, Lucretia; SEVCENCO, Victoria;
VASILIU, Lia

Research on the resistance of the different kinds of wheat to the attack of the *Tilletia nanifica* (wagn.) Savul. (T. *contraversa* Kuhn.) fungus, and the effect of some chemical substances in the fight against this parasite. Studii cerc biol veget 15 no.2:163-173 '63.

POPESCU, G., biolog, laureata a Premiului de Stat; ESANU, F., ing.;
ANDRUCHOVICI, F., ing.; LAZAR, V., biolog; SAVULESCU, Alice,
prof. dr.

Combating the microorganisms in moist straw cellulose. Cel
hirtie 11 no.4:141-150 Ap '62.

1. Institutul de Cercetari si Proiectari pentru Hirtie, Celu-
loza si Stuf (for Andruchovici). 2. Institutul de biologie
"Traian Savulescu" (for Lazar). 3. Membru al Academiei R.P.R.
(for Savulescu).

SAVULESCU, A.; STANESCU, N.; CONSTANTINESCU, O.

Investigations on the penetration and translocation of
certain antibiotics in tomato plants. Rev biol 8 no. 4:
409-417 '63.

1. Institute of Biology "Traian Savulescu" of the Academy
of the R.P.R., Department of Phytopathology and Microbiology,
Bucharest.

*

SAVULESCU, A.

"Problems of biology." Reviewed by A. Savulescu. Rev
biol 8 no. 4: 474-475 '63.

*

SAVULESCU, Alice, acad.; LAZAR, Viorica; POPESCU, Georgeta

Research on identifying and fighting cellulose molds. Studii
cerc biol veget 15 no.4:521-529'63

SAVULESCU, Alice, acad. dr.; BONTEA, Vera; BECERESCU, D.; DUMITRAS, Lucretia
(Bucuresti)

Two decades of research on Ustilaginales. Natura Biologie 16 no.5:
3-14 S-O '64.

SAVULESCU, Alice, acad.; ESANU, V.; CALIN, Neli; NEGULESCU, Florica; GROSSU, Maria; HURGHISIU, Ileana

Morphologic, anatomic, physiological, and biochemic characteristics of some species of potatoes with different degrees of resistance to *Phytophthora infestans* (Mont.) de Bary fungus attack. Studii cerc biol s. bot 17 no.1:71-84 '64.

1. Laboratory of Phytopathology and Microbiology, "Traian Savulescu" Institute of Biology. Submitted August 5, 1964.

ACC NR: AP6029166

SOURCE CODE: RU/0003/66/017/002/0074/0077

AUTHOR: Brodman, Felicia; Teodorescu, Lydia; Savulescu, A.; Niculescu, G.

ORG: none

TITLE: Sulphochlorination of copper phthalocyanines ¹

SOURCE: Revista de chimie, v. 17, no. 2, 1966, 74-77

TOPIC TAGS: phthalocyanine, dye chemical, nonmetallic organic derivative, chemical synthesis

ABSTRACT: The authors discuss the principles and methods of obtaining mono- and bi-reactive phthalocyanine dyes, and report on the experimental preparation of tetra-3-substituted phthalocyanine derivatives and the direct sulphochlorination of copper phthalocyanine. Orig. art. has: 1 figure, 1 table, and 2 formulas. [JFRS: 36,556]

SUB CODE: 07, 11 / SUBM DATE: none / OTH REF: 018

Card 1/1 JS

UDC: 668.819.5.094.45:547.759.5

0917

2733

SAVULAKIN, V. I.

Suggested conference regarding mechanization of harvesting
bifoliate seed plants. Med elektrofizic 9 no.5:77-78 '64.

1. Research Institute for Mechanization of Agriculture.

SAVULESCU, Olga, prof. univ. dr. (Bucuresti)

Development of vegetal pathology in Romania. Nature Biologia
16 no.4312-16 II-Ag:64

BUIA, Al., dr., prof. univ. (Craiova); MIHAILESCU, I., dr., prof. univ.
(Craiova); SAVULESCU, D., prof. (Craiova); DRAGUT, C., prof. (Craiova);
OCULEANU, M., prof. (Craiova),

Appraisal and suggestions on the botanical handbook for the 8th
class. Natura Biologie 16 no.2:53-57 Mr-Apr '63.

RUMANIA

GOLAESCU, Maria, MD; NICOLESCU, N., MD; SAVULESCU, E., MD.

Clinic No I for Infectious Diseases, Institute of Medicine
and Pharmacy, Bucharest (Clinica I de boli infectioase
I.M.F., Bucuresti); Director: Professor M. Voiculescu.
- (for all)

Bucharest, Viata Medicala, No 24, 15 Dec 63, pp 1665-1679

"The Present Clinical and Radiologic Aspects of ^{PNEUMONIA}~~Pneumonia~~ in
the Adult."

L 33703-66 T JK

ACC NR: AP6025161

SOURCE CODE: RU/0012/65/061/004/0631/0637

AUTHOR: Chelemen, N. (Lieutenant colonel; Veterinarian); Savulescu, M. (Veterinarian; Lieutenant colonel); Vainer, E. (Doctor, Colonel); Strati, I. (Doctor, Lieutenant colonel); Oprea, C. C. (Doctor)

O.G: none

TITLE: Considerations on the kaolin-agglutination phosphatidic test in the diagnosis of tuberculous afflictions

SOURCE: Revista sanitara militara, v. 61, no. 4, 1965, 631-637

TOPIC TAGS: tuberculosis, diagnostic medicine, military medicine, kaolin

ABSTRACT: The authors tested the use of kaolin-agglutination phosphatidic tests as a tool for the diagnosis of tuberculous ailments in military personnel, working out the most appropriate procedures and checking the effectiveness of the test through a comparative study on patients with confirmed tuberculous lesions and some with other diseases. The possibility of using this test as a supplementary diagnostic method in guinea pig tests was also studied. Orig. art. has: 3 tables. /JPRS: 33,500/

SUB CODE: 06/ SUBM DATE: 22Jun64/ ORIG REF: 005/ OTH REF: 013

Card 1/1

CHELEBEN, N., Lieutenant-Colonel, Medical Veterinary Corps; CIORTEA, G., Dr.; and SAVULESCU, M., Lieutenant-Colonel, Medical Veterinary Corps.

"Effect of Gamma Irradiation on the Diagnostic Potentialities of Some Biological Products"

Bucharest, Revista Sanitara Militara, Vol 16, Special No., 1965; pp 505-508

Abstract: Study of effects of radiation on brucellar antigen and on immunogenicity of tuberculin in guinea pigs. The brucellar antigen irradiated 10^5 r changed in agglutinability, became unsuitable for diagnostic use. The tuberculin was unaffected for all practical purposes. 3 tables.

1/1

- 90 -

SAVULESCU, S.

SAVULESCU, S. Mechanization of coal extraction in the Salajul Coal Enterprise. p. 373.

Vol. 7, no. 8, August 1956

REVISTA MINELOR

TECHNOLOGY

Bucuresti, Rumania

So: East European Accession, Vol. 7, no. 3, March 1957

SAVULESCU, N.
RUMANIA / General and Specialized Zoology. Insects. P
Systematics and Fauna.

Abs Jour: Ref Zhur-Biol., No 13, 1958, 59073.

Author : Savulescu, N.

Inst : The Academy of RPR.

Title : Acinopus (Csimus) ammophilus Dej. (Coleoptera-
Carabidae) in the Rumanian Fauna.

Orig Pub: Comun. Acad. RPR, 1956, 6, No 9, 1089-1093.

Abstract: A description of the symptoms of sexual dimor-
phism in A. ammophilus, previously unknown. Bio-
metric and ecologic data. A photograph of the
insect, and illustrations of the latter's abdom-
inal sternite.

Card 1/1

SĂVULESCU (T.) & SĂVULESCU (OLGA). *Uredineae novae Romaniae*.
[New Uredineae of Rumania.]—Reprinted from 'Hommage au
Professeur E. C. Teodoresco', Bucharest, 1937, 6 pp., 1 col. pl.,
2 figs., 1937. [Received May, 1938.]

Latin diagnoses are given of six species of Uredineae new to the flora
of Rumania [cf. *R.A.M.*, xvi, p. 776], one of which is also new to
science. *Aecidium teodorescui* n.sp., producing circular spots, 2 to 10 mm.
in diameter, on leaves of *Berberis vulgaris* in Bessarabia, is characterized
by amphigenous pycnidia, 72 to 100 μ in diameter; hypophyllous, more
rarely epiphyllous, often ramicolous, tubular aecidia, numbering 80 to
100, densely disposed in large groups, 0.2 to 1 cm. diam., sometimes
also solitary, and then on round, often thickened, reddish-brown spots
2 to 10 mm. diam., 1 mm. high by 180 to 210 μ broad, with a white,
recurved, denticulate margin, polyhedral pericidal cells, 23 to 30 by 20
to 23 μ , with striate walls, the outer 8 to 10 and the inner 3 to 4 μ in
thickness; and polyhedral, angular to globose or ellipsoid, densely
verruculose, pale orange aecidiospores, 16.5 to 23 by 11.5 to 18 μ ,
with an epispore 1.5 to 2 μ in thickness.

A. delphinii-consolidae Hollós (*Math. term. KőzL.*, xxxv, pp. 1, 12, 13,
1926) was observed on leaves of *Delphinium consolida* in Muntenia in 1930.

* g A m

SĂVULESCU (T.). & SĂVULESCU (OLGA). **Matériaux pour la flore des Uredinales de Roumanie.** [Materials for the flora of the Uredineae of Rumania.]—*Mem. Sect. sci. Acad. roum.*, Ser. 3, xvii, pp. 113-149, 18 figs., 1942. [Received February, 1947.]

This is a critically annotated list of 345 rusts collected in Rumania [cf. *R.A.M.*, xix, pp. 365, 729] on 629 hosts belonging to 47 families.

15 of 11
 NAYULESCU (OLIVIA). *Studii specifice de Cystopus Lév. din Europa cu privire specială asupra speciilor din România.* [A study on the European species of the genus *Cystopus* Lév. with special reference to the species found in Romania.]—Thesis 213, Univ. Bucarest, 106 pp., 25 figs., 73 graphs, 1948. [French summary. Received April, 1948.]

In this study of the European species of *Cystopus*, with special reference to those found in Romania, the author retains the subsections *Aequales* and *Annulati* of Fischer. *C. candidus* [R.A.M., xxv, pp. 88, 416; xxvi, p. 532] is very widespread and very polyphagous. It attacks, chiefly, members of the Lepidaceae, Brassicaceae, Hesperideae, Sisymbrieae, Eucaliptaceae, Arabideae, Matthiolaceae, Drabaceae, and Alyssaceae, but does not infect the more primitive tribes. Biometrical measurements of the conidia taken on all the hosts on which this fungus has been found in Romania have led the author to make two varieties (1) var. *ellipsoidicus* n. var., with ellipsoidal conidia measuring 18 by 15 μ , found on *Brassica nigra*, *Hesperis matronalis*, and other hosts, and (2) var. *globosus* n. var. with spherical conidia 12 to 18 μ in diameter, of which there are three forms, (a) f. *macrosporus* n. f. with conidia 18 μ in diameter on wallflower and (b) f. *intermedius* n. f. with conidia 15 μ in diameter on rape, turnip, radish, and other hosts, and (c) f. *microsporus* n. f. with conidia 12 to 13 μ in diameter on *Alyssum alyssoides*, *Arabis* spp., and other hosts. The varieties and forms into which *C. candidus* is divided by the author do not correspond with the forms *macrosporus* and *microsporus* of Tugashi and his co-workers [ibid., x, p. 556].

Inoculation experiments showed that *C. candidus* comprises the following forms specialized on certain hosts: (1) f. sp. *alyssum-alyssoides*, (2) f. sp. *brassicarum-nigrae* [ibid., xviii, p. 275], (3) f. sp. *capitatae-burserae-pastoris*, (4) f. sp. *coronopii-procumbentis*, (5) f. sp. *hesperidis-matronalis*, (6) f. sp. *lepidii-perfoliati*, (7) f. sp. *sinapis-arvensis*, and (8) f. sp. *cheiranthi-cheiri*. These forms belong to the different varieties and morphological forms differentiated by the author.

SAVULESCU, C. ; SAVULESCU, T.

Two kinds of Ustilago, new in Rumania, parasites of Graminaceae: Ustilago
bullata Berkley and Ustilago vavilovi Jaczewski. p. 77. Vol. 5. No. 1, Jan 1955.
Comunicarile.

Source: East European Accessions List (EEAL), Lc, Vol. 5, No. 3, March 1956

Country : RUMANIA
Category : Plant Diseases. Diseases of Cultivated Plants. 0

Abs Jour : RZhBiol., No 6, 1959, No 25187

Author : Savulescu, O.; Popescu, V.

Inst : "G. I. Parhon" University.

Title : The Effect of Some Antibiotics - Phytocides -
on the Chlamydo spores of *Tilletia foetida*.

Orig Pub : AN. Univ. "G. I. Parhon." Ser. stiint. natur.,
1957, No. 13, 113-121

Abstract : In testing the effect of horseradish roots,
freshly rubbed through a sieve, up on the
chlamydo spores of *T. foetida*, it was establi-
shed that the volatile substances contained
in the horseradish roots possess a strong
antibiotic action. The growth of the spores
during five-minute exposure is retarded or
stopped completely.

Card : 1/1

SAVULESCU, G.

Phytopathological news in the Rumanian Peoples Republic. In English, p. 59.

REVUE DE BIOLOGIE. JOURNAL OF BIOLOGY (Academia Republicii Populare Romine)
Bucuresti, Rumania
Vol. 4, no. 1, 1959

Monthly list of Eastern European Accession Index (EEAI), LC Vol. 8, No. 11
November 1959
Uncl.

SAVULESCU, Olga; ELIADE, Eugenia

Micromycetes of Rumania. Note IV. Studii cerc biol veget 14
no.1:9-27 '62.

1. Laboratorul de fitopatologie, Institutul botanic, Bucuresti.
Comunicare prezentata de Eug. Radulescu, membru corespondent al
Academiei R.P.R.

*

SAVULESCU, Olga, dr. prof. univ. (Bucuresti)

Sexual process in mushrooms. Natura Biologie 15 no. 3:
13-20 My-Je '63.

SAVULESCU, Olga, dr., prof. univ. (Bucuresti)

Species of microorganisms. Natura Biologie 15 no.5:3-11 8-0'63.

SAVULESCU, S., Ing.

Experiments in rock bolt timbering in lignite. Rev min 14 no.9:
390-392 S '63.

SAVULESCU, Spirea, ing.

Utilization of the sinking truss in the No.1 mining shaft at
Berevoesti. Rev min 13 no.4:173-176 Ap '62.

SAVULESCU, St.; DARIE, Gh.; TOMA, V.

Three-dimensional aspects of the transition caused by a low intensity jet on a flat plate in incompressible flow. Pt. 1. Studii cerc mec apl 13 no.6:1557-1589 '62.

SAVULESCU, ST.

Experimental Research into the Repartition (Distribution) of the Circulation
along the Wingspread of Straight and Arrow-shaped (Sweepback) Elliptical Wings.
Studii Si Cercetari De Mechanica Aplicata (Studies and Research in Applied
Mechanics), #1-2:39:Jan-Jun 55

Săvulescu, St. Une méthode simple pour l'étude des caractéristiques de la couche limite. Rev. Méc. Appl. 1 (1956), no. 2, 37-42.

The equations for two-dimensional boundary-layer flow of a compressible fluid, subjected to the von Mises transformation, may be written as

$$\frac{\partial}{\partial \eta_\Delta} \tau = L \left(\frac{\partial u_\Delta}{\partial \xi}, \frac{\partial u_\Delta}{\partial \eta_\Delta} \right), \quad \frac{\partial}{\partial \eta_\Delta} (\tau u + q_v) = L_1 \left(\frac{\partial E_\Delta}{\partial \xi}, \frac{\partial E_\Delta}{\partial \eta_\Delta} \right).$$

Here τ = shear stress, q_v = heat flow in y -direction; u_Δ and η_Δ , E_Δ and η_Δ are, respectively, x -velocity and streamfunction, total energy and streamfunction, all dimensionless so that they may be zero at the wall and unity at the kinematic and thermal boundary layer edges (δ, Δ) ; ξ is the dimensionless x -coordinate; and L , L_1 denote linear functions.

If $u_\Delta = \eta_\Delta^n$ and $E_\Delta = \eta_\Delta^m$ (where m and n may depend on x) are introduced as first approximations, τ and $\tau u + q_v$ are obtained by a quadrature. Another quadrature then gives improved values of u_Δ and E_Δ , where $\tau \propto \partial u_\Delta / \partial \eta_\Delta$ and $\tau u + q_v \propto \partial E_\Delta / \partial \eta_\Delta$. (The last relation seems, however, to presuppose that the Prandtl number be unity.) Three examples are discussed briefly.

G. Kuatli

"A Simple Method for the Study of Boundary Layer Characteristics"

SAVULESCU, S.

SAVULESCU, S.; CAMARASESCU, N.

SAVULESCU, S.; CAMARASESCU, N. Utilization of the rheoelectric tub for the determination of geometric characteristics of optimum carrying systems. p. 470.

Vol. 3, no. 12, Dec. 1956
REVISTA TRANSPORTURILOR.
TECHNOLOGY
RUMANIA

So: East European Accession, Vol. 6, No. 5, May 1957

SAVULESCU, S.

Experimental studies on the distribution of circulation along the span of
a straight and a sagital elliptic wing. p. 39. STUDII SI CERETARI DE MECANICA
APLICATA. Bucuresti.
Vol. 6, no.1/2, Jan/June 1956.

SOURCE: East European Accessions List (EEAL), Library of Congress,
Vol. 5, no. 11, Nov. 1956.

SAYULESCU, ST.

Sayulescu, St. Une méthode expéditive pour l'étude des caractéristiques de la couche limite. Com. Acad. R. P. Roumne 6 (1956), 877-883. (Romanian. Russian and French summaries)

The results of the author's investigation are accurately stated in the summary, and, therefore, it is reproduced below.

"L'auteur expose une méthode expéditive de détermination des caractéristiques de la couche limite, méthode procédant par approximations successives. Les équations de la couche limite sont transformées à l'aide de la variable adimensionnelle $\eta = y/\psi$ où $\psi = \int_0^y u dy$. La première approximation, du genre $u/u_\infty = \eta^n$, est introduite dans ces équations dont la structure est celle de l'équation de la diffusion, étant donné la forme de la tension de frottement et le transfert de chaleur qui dépendent des gradients de vitesse et, respectivement, de température. En supposant que n ne dépend que du régime d'écoulement, laminaire ou turbulent, on déduit les caractéristiques de la couche limite (frottement, transfert de chaleur, épaisseur δ) par une intégration double."

The expressions obtained by the author reduce in some cases to well-known expressions. K. Bhagwandin.

SAVULESCU, S.

Determination of the characteristics of the boundary layer by using some typical profiles for speed and temperature.

p. 341 (Academia Republicii Populare Romine. Institutul de Mecanica Aplicata. Studii Si Cercetari De Mecanica Aplicata. Vol. 8, no. 2, 1957. Bucuresti, Rumania)

Monthly Index of East European Accessions (EEAI) IC. Vol. 7, no. 2,
February 1958

SAVULESCU, S.

Method of the standard profiles of speeds and temperatures, and its application in calculating the boundary layer on a body of revolution. p. 975.

Academia Republicii Populare Romine. Institutul de Mecanica Aplicata. STUDII SI CERCETARI DE MECANICA APLICATA. Bucuresti, Rumania. Vol. 8, no. 4, 1957.

Monthly list of East European Accessions (EEAI) IC, Vol. 8, no. 8, Aug. 1959

Uncl.

SAVULESCU, St.

Săvulescu, St. Application de la méthode des profils type de vitesses et de températures au calcul de la couche limite sur un corps de révolution. Acad. R. P. Romine. Stud. Cerc. Mec. Apl. 8 (1957), 975-982. (Romanian. Russian and French summaries)

DAN CET article, l'auteur étend sa méthode de calcul des caractéristiques de la couche limite bidimensionnelle au cas tridimensionnel des corps de révolution. On montre que, en utilisant la variable généralisée

$$\eta(u) = \frac{\Psi_r}{V_{\infty} \delta} = \frac{\int_0^u \rho u (R \pm \cos \alpha) dr}{\int_0^{\eta(\Delta)} \rho u (R \pm r \cos \alpha) dr}$$

les vitesses et les énergies adimensionnelles peuvent se mettre sous la forme type

$$u_a = \eta^n, \quad E_a \cong \eta_1^{n_1}$$

où n, n_1 diminuent légèrement en égard du cas bidimensionnel. Résumé de l'auteur

Application of the method of profiles of the velocity and temperature to the calculation of a body of revolution

Savulescu, S.

On some solutions relative to the compressible nonpermanent boundary layer. p. 867.

Academia Republicii Populare Romine. STUDII SI CERCETARI DE MECANICA APLICATA.
Bucuresti, Rumania. Vol. 9, no. 4, 1958.

Monthly List of East European Accessions (EEAL) LC Vol. 9, No. 2, January 1960.

Uncl.

SAVULESCU, S.

The behavior of certain solutions of the three-dimensional boundary layer, assuming typical profiles of speed and temperature. p.695

STUDII SI CERCETARI DE MECANICA APLICATA. Academia Republicii Populare Romine
Bucuresti, Rumania
Vol. 10, no.3, 1959

Monthly List of East European Accessions (EEAI) LC., Vol. 9, no.1, Jan. 1960
Uncl.

20565
R/008/60/000/001/003/009
D256/D301

26.2122
AUTHOR: Săvulescu, Șt. N.

TITLE: Determination of the characteristics of the three-dimensional boundary layer. Applications to the case of axial ventilator blades

PERIODICAL: Studii și cercetări de mecanică aplicată, no. 1, 1960, 61 - 77

TEXT: The author extends the application of the method of standard speed and temperature profiles to the case in which the external current lines are known curves. The pressure distribution is also known and the surface is rotating. Considered is in Fig. 1 a blade rotating around the point O, the rotation vector $\vec{\omega} = \omega_x \vec{i} + \omega_y \vec{j} + \omega_z \vec{k}$ and the Oxyz system of axes being connected to this blade. Oy is the normal of the surface which is considered to be a plane, and the direction of the bisector $\vec{B}$ of the axes on the Ox and Oz surfa-

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D256/D301

Determination of the ...

ces is the normal on the medium line of this blade. At a point P of the surface, the direction of the external current's speed

$\vec{V}_e = u_{1e} \vec{i} + v_{1e} \vec{j} + w_{1e} \vec{k}$ forms with the direction of $\vec{B}$ an angle φ .

If the index 1 affects the values referred to a system having V_e as bisector, in a certain point of the boundary layer there is !

$$\vec{V} = u \vec{i} + v \vec{j} + w \vec{k} = u_1 \vec{i}_1 + v_1 \vec{j}_1 + w_1 \vec{k}_1,$$

whence the author deduces the relations of u_a, w_a, u_e, w_e, v and φ :

$$\begin{aligned} u_a &= u_{1a} \cos \varphi - w_{1a} \sin \varphi, & u_e &= u_{1e} (\cos \varphi - \sin \varphi) \\ w_a &= u_{1a} \sin \varphi + w_{1a} \cos \varphi, & w_e &= u_{1e} (\cos \varphi + \sin \varphi) \\ v &= v_1, & \varphi &= \varphi(x, z) \end{aligned} \quad (1)$$

where

$$u_a = \frac{u}{u_{1a}}, \quad u_{1a} = \frac{u_1}{u_{1e}}, \quad w_a = \frac{w}{w_{1a}}, \quad w_{1a} = \frac{w_1}{w_{1e}}, \quad u_{1e} = w_{1e}.$$

Card 2/24

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D256/D301

Determination of the ...

The force of Coriolis exerted on the unitary volume particle of the boundary layer is expressed by

$$\vec{f} = -2\rho\vec{\omega} \wedge \vec{V}, \quad (2)$$

i.e. f_x, f_z, f_y are finally expressed by

$$f_x \simeq -2\rho\omega \cos \beta w, \quad f_z \simeq 2\rho\omega \cos \beta u, \quad f_y \simeq 0. \quad (3)$$

The centrifugal force referred to the volume unity is:

$$f^* = \rho\vec{\omega} \wedge (\vec{\omega} \wedge \vec{r}) \quad (4)$$

which supplies the corresponding components by considering $\vec{\omega} =$

$= \omega_x \vec{i} + \omega_y \vec{j} + \omega_z \vec{k}$. In the practical cases mentioned, $\omega_y \gg \omega_x$, $\omega_y \gg \omega_z$ and the thickness of the boundary layer is small compared with the surface coordinates, f_x^*, f_z^* , and f_y^* are expressed by

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R/008/60/000/001/003/009
D256/D301

Determination of the ...

$$f_x^* = \rho \omega^2 \cos^2 \beta x; \quad f_z^* \approx \rho \omega^2 \cos^2 \beta z; \quad f_y^* \approx 0. \quad (5)$$

The equations of the boundary layer are expressed by

$$\rho \frac{du}{dt} = f_x + f_x^* - \frac{\partial p}{\partial x} + \frac{\partial \tau}{\partial y}, \quad \rho \frac{dw}{dt} = f_z + f_z^* - \frac{\partial p}{\partial z} + \frac{\partial \tau_1}{\partial y}, \quad \frac{\partial p}{\partial y} = 0 \quad (6)$$

$$\rho \frac{dE}{dt} = \frac{\partial}{\partial y} (\tau u + \tau_1 w + q_y), \quad \text{div} (\rho \vec{V}) = 0,$$

in which τ , τ_1 , q_y and E are expressed by

$$\tau = M \frac{\partial U}{\partial y}, \quad \tau_1 = M_1 \frac{\partial W}{\partial y}, \quad q_y = \Lambda \frac{\partial T}{\partial y}, \quad E = C_p T + \frac{u^2 + w^2}{2},$$

p being the pressure, ρ the density and T the temperature. The boundary conditions are expressed by $y = 0, u = w = 0, T = T_w(x, z)$ sau $q_{yw} = q_{yw}(x, z), y = \delta, u_a = \cos \varphi - \sin \varphi, w_a = \sin \varphi + \cos \varphi,$ ✓

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Determination of the ...

$$E_a = 1, \quad \alpha = 0, \quad \alpha_1 = 0, \quad q_y = 0. \quad (7)$$

The author then transforms the first equation of motion by the variables

$$\xi = x, \quad \xi = z, \quad \eta = \frac{\int_0^y \rho u_1 dy}{\int_0^\delta u_1 dy} = \frac{\psi}{\psi\delta}, \quad (8)$$

in which the transversal variable η is the ratio of the deliveries calculated with the aid of the velocity u_1 , which varies from 0 to u_{1e} according to a continuous curve and not too different from the usual behavior of the speed profiles. On the basis of the usual calculations, the transformed equation is expressed by

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Determination of the ...

$$\begin{aligned} \frac{\partial \tau}{\partial \eta} = & \cos \varphi A \frac{\partial u_{1a}}{\partial \xi} - \sin \varphi A \frac{\partial w_{1a}}{\partial \xi} + \cos \varphi B \frac{\partial u_{1a}}{\partial \xi} - \sin \varphi B \frac{\partial w_{1a}}{\partial \xi} + \\ & + \cos \varphi C \frac{\partial u_{1a}}{\partial \eta} - \sin \varphi C \frac{\partial w_{1a}}{\partial \eta} + D, \end{aligned} \quad (9)$$

in which $A, B, C, D, f_x + f_x^*$, and τ are given by

$$A = \psi_s u_{1a} \left(\cos \varphi - \frac{w_{1a}}{u_{1a}} \sin \varphi \right),$$

$$B = \psi_s u_{1a} \left(\frac{w_{1a}}{u_{1a}} \cos \varphi + \sin \varphi \right),$$

$$\begin{aligned} C = & -u_{1a} \frac{\partial}{\partial \xi} \left[\psi_s \int_0^\eta \left(\cos \varphi - \frac{w_{1a}}{u_{1a}} \sin \varphi \right) d\eta \right] - \\ & - u_{1a} \frac{\partial}{\partial \xi} \left[\psi_s \int_0^\eta \left(\frac{w_{1a}}{u_{1a}} \cos \varphi + \sin \varphi \right) d\eta \right], \end{aligned}$$

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Determination of the ...

$$D = \psi_s \left\{ \frac{u_s}{u_{1s}} u_s \frac{\partial u_{1s}}{\partial \xi} + \frac{u_s}{u_{1s}} w_s \frac{\partial u_{1s}}{\partial \zeta} - u_{1s} \frac{u_s}{u_{1s}} w_s \frac{\partial \varphi}{\partial \xi} - \right. \\ \left. - w_{1s} \frac{w_s}{u_{1s}} w_s \frac{\partial \varphi}{\partial \zeta} + \frac{1}{\rho u_{1s}} \frac{1}{u_{1s}} \frac{\partial p}{\partial x} - \frac{1}{\rho u_{1s}} \frac{1}{u_{1s}} (f_s + f_s^*) \right\}, \\ f_s + f_s^* = -2 \cos \beta \omega \rho w_1 \left(\sin \varphi \frac{u_{1s}}{w_{1s}} + \cos \varphi \right) + \omega^2 \cos^2 \beta \rho \xi, \\ \tau = \mathcal{M} \frac{\rho u_{1s}^2}{\psi_s} u_{1s} \frac{\partial}{\partial \eta} (\cos \varphi u_{1s} - \sin \varphi w_{1s}).$$

The second equation of motion is transformed in a similar way by the variables

$$\xi = x, \quad \zeta = z, \quad \eta_1 = \frac{\int_0^x \rho w_1 dy}{\int_0^z \rho w_1 dy} = \frac{\psi_1}{\psi_{1s}}. \quad (10) \quad (10)$$

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Determination of the ...

finally obtaining

$$\frac{\partial \tau_1}{\partial \eta_1} = \cos \varphi A_1 \frac{\partial w_{1a}}{\partial \xi} + \sin \varphi A_1 \frac{\partial u_{1a}}{\partial \xi} + \cos \varphi B_1 \frac{\partial w_{1a}}{\partial \zeta} + \sin \varphi B_1 \frac{\partial u_{1a}}{\partial \zeta} + \cos \varphi C_1 \frac{\partial w_{1a}}{\partial \eta_1} + \sin \varphi C_1 \frac{\partial u_{1a}}{\partial \eta_1} + D_1, \quad (11)$$

in which $A_1, B_1, C_1, D_1, f_Z + f_Z^*$ and τ_1 are expressed by

$$A_1 = \psi_{1s} u_{1s} \left(\cos \varphi \frac{u_{1a}}{w_{1a}} - \sin \varphi \right)$$

$$B_1 = \psi_{1s} u_{1s} \left(\cos \varphi + \sin \varphi \frac{u_{1a}}{w_{1a}} \right)$$

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Determining of the ...

$$C_1 = -u_{1s} \frac{\partial}{\partial \xi} \left[\psi_{1s} \int_0^{\eta_1} \left(\cos \varphi \frac{u_{1s}}{w_{1s}} - \sin \varphi \right) d\eta_1 \right] -$$

$$- u_{1s} \frac{\partial}{\partial \zeta} \left[\psi_{1s} \int_0^{\eta_1} \left(\cos \varphi + \frac{u_{1s}}{w_{1s}} \sin \varphi \right) d\eta_1 \right]$$

$$D_1 = \psi_{1s} \left\{ \frac{w_s}{w_{1s}} w_s \frac{\partial w_{1s}}{\partial \zeta} + \frac{w_s}{w_{1s}} u_s \frac{\partial w_{1s}}{\partial \xi} + u_{1s} \frac{u_s}{w_{1s}} u_s \frac{\partial \varphi}{\partial \xi} + \right.$$

$$\left. + w_{1s} \frac{u_s}{w_{1s}} w_s \frac{\partial \varphi}{\partial \zeta} + \frac{1}{\rho w_{1s}} \frac{1}{w_{1s}} \frac{\partial p}{\partial z} - \frac{1}{\rho w_{1s}} \frac{1}{w_{1s}} (f_s + f_z^*) \right\},$$

$$f_s + f_z^* = 2 \rho \omega \cos \beta u_1 \left(\cos \varphi - \frac{w_{1s}}{u_{1s}} \sin \varphi \right) + \rho \omega^2 \cos^2 \beta \zeta,$$

$$\tau_1 = \frac{M_1 \rho w_{1s}^2}{\psi_{1s}} w_{1s} \frac{\partial}{\partial \eta_1} (\cos \varphi w_{1s} + \sin \varphi u_{1s}).$$

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Determining of the ...

By the variables

$$\xi = x, \quad \zeta = z, \quad \eta_2 = \frac{\int_0^x \rho E_a dy}{\int_0^z \rho E_a dy} = \frac{\psi_2}{\psi_{2B}}, \quad (12) \quad (12)$$

the power equation is changed into

$$\frac{\partial}{\partial \eta_2} (\tau u + \tau_1 w + q_y) = A_2 \frac{\partial E_1}{\partial \xi} + B_2 \frac{\partial E_1}{\partial \zeta} + C_2 \frac{\partial E_a}{\partial \eta_2} + D_2, \quad (13) \quad (13)$$

in which $A_2, B_2, C_2, D_2, \tau u + \tau_1 w + q_y, E, \Delta, P_r$ and i are given by

$$A_2 = \psi_{2\delta} \Delta u_{1e} \frac{u_a}{E_a}, \quad B_2 = \psi_{2\delta} \Delta w_{1e} \frac{w_a}{E_a}, \quad C_2 = -\Delta \left\{ \frac{\partial}{\partial \xi} \right\} [$$

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Determination of the ...

$$\left[\psi_{2\delta} u_{1e} \int_0^{\eta_2} \left(\cos \varphi \frac{u_{1a}}{E_a} - \sin \varphi \frac{w_{1a}}{E_a} \right) d\eta_2 \right] + \frac{\partial}{\partial \xi} \left[\psi_{2\delta} u_{1e} \int_0^{\eta_2} (\cos \varphi \frac{w_{1a}}{E_a} + \sin \varphi \frac{u_{1a}}{E_a}) d\eta_2 \right] \Bigg\},$$

$$D_2 = \psi_{2\delta} \left[u_{1e} u_a \frac{\partial \Delta}{\partial \xi} + u_{1e} w_a \frac{\partial \Delta}{\partial \xi} + u_{1e} \frac{u_a}{E_a} \frac{\partial E_w}{\partial \xi} + u_{1e} \frac{w_a}{E_a} \frac{\partial E_w}{\partial \xi} \right],$$

$$\tau_u + \tau_{1w} + q_y = \frac{M_p}{\psi_{2\delta}} E_a \frac{\partial}{\partial \eta_2} \left(\frac{u^2}{2} + \frac{M_1}{M} \frac{w^2}{2} + \frac{i}{P_r} \right),$$

$$E = E_a \Delta + E_w, \quad \Delta = E_e - E_w, \quad P_r = \frac{C_p M}{\Lambda},$$

$$i = C_p T$$

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Determination of the ...

The boundary conditions for these equations are written as
 $\eta = 0, u_a = w_a = 0, E_a = 0$ sau $q_{yw} = q_{yw}(\xi, \eta), \eta = 1, u_a = \cos \varphi -$
 $-\sin \varphi, w_a = \sin \varphi + \cos \varphi, E_a = 1, \tau \approx 0, \tau_1 \approx 0, q_y \approx 0. \quad (14)$

By using the approximations

$$\frac{\partial u_{1a}}{\partial \xi} = \frac{u_{1a}}{\partial \xi} = \frac{w_{1a}}{\partial \xi} = \frac{w_{1a}}{\partial \xi} = \frac{E_a}{\partial \xi} = \frac{E_a}{\partial \xi} = 0 \quad (15)$$

and $\lambda_a = \frac{u_{1a}}{w_{1a}} \approx 1, \quad \lambda_b = \frac{u_{1a}}{E_a} \approx 1, \quad (16)$

the first integration of (9), (11) and (13) leads to the determination of the friction and transfer

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Determination of the ...

$$\begin{aligned} \gamma_u = \frac{M_e \rho_e u_{1e} u_e}{2\psi_0^2} \left[K - \frac{2\psi_0^2}{M_e \rho_e u_{1e}^2 u_e} \left(\frac{du_e}{dt} N - 2\omega \cos \beta w_e N^* + \right. \right. \\ \left. \left. + \omega^2 \cos^2 \beta \xi N^{**} \right) \right], \quad \gamma_{1w} = \frac{M_{1e} \rho_e u_{1e} w_e}{2\psi_{10}^2} \left[K_1 - \frac{2\psi_{10}^2}{M_{1e} \rho_e u_{1e}^2 w_e} \left(\frac{dw_e}{dt} N_1 + \right. \right. \\ \left. \left. + 2\omega \cos \beta u_e N_1^* + \omega^2 \cos^2 \beta \xi N_1^{**} \right) \right], \quad q_{1w} = \frac{M_e \Delta}{2\psi_0^2 P_r} \left[K_2 - \frac{2\psi_{20}^2 \rho_e P_r}{M_e \Delta} \frac{1}{\Delta} \frac{d\Delta}{dt} N_2 \right], \quad (17) \end{aligned}$$

in which K, N, N*, N**, K₂ and N₂ are expressed by

$$K = \frac{\int_0^1 \eta^d u_{1a}}{\int_0^1 \eta^d du_{1a}} \cdot \int_0^1 M_a \rho_a d(u_{1a}^2), \quad (18)$$

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Determination of the ...

$$N = - \frac{\int_0^1 \eta du_{1a}}{\int_0^1 \eta^2 du_{1a}} \int_0^1 \eta \left(u_{1a} - \frac{1}{\rho_a u_{1a}} \right) d\eta + \int_0^1 \left(u_{1a} - \frac{1}{\rho_a u_a} \right) d\eta, \quad (18)$$

$$N^* = \int_0^1 \left(\frac{1}{\rho_a u_{1a}} - 1 \right) d\eta - \int_0^1 \eta \left(\frac{1}{\rho_a u_{1a}} - 1 \right) d\eta \cdot \frac{\int_0^1 \eta du_{1a}}{\int_0^1 \eta^2 du_{1a}},$$

$$N^{**} = - \frac{\int_0^1 \eta du_{1a}}{\int_0^1 \eta^2 du_{1a}} \cdot \int_0^1 \frac{1}{u_{1a}} \left(1 - \frac{1}{\rho_a} \right) \eta d\eta + \int_0^1 \frac{1}{u_{1a}} \left(1 - \frac{1}{\rho_a} \right) d\eta,$$

$$K_2 = \frac{\int_0^1 \eta_2 dE_a}{\int_0^1 \eta_2^2 dE_a} \cdot \int_0^1 \mathcal{M}_a \rho_a d \left[E_a^2 + \frac{2}{3} (P_r - 1) \frac{u_e^2 + w_e^2}{\Delta} E_a^3 \right],$$

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